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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/626,555

Filing Date: July 25, 2003

Appellant(s): ECHES ET AL.

Roger W. Parkhurst
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 08/22/2007 appealing from the Office action mailed 06/15/2006.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,289,777	SIPPEL	3-1994
4,524,695	BISPING ET AL.	6-1985

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

DETAILED ACTION

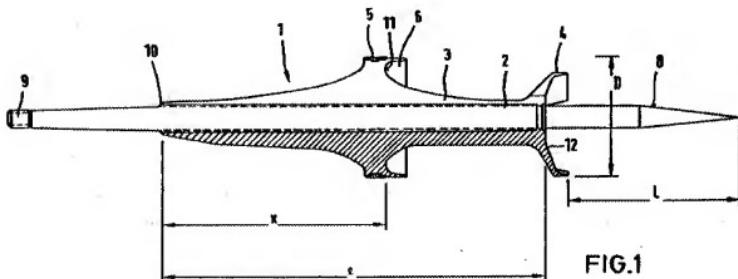
Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5289777 issued to Sippel in view of US 4524695 issued to Bisping.
3. Sippel discloses a sub-caliber penetrator having a sabot comprising at least 2 segments with each segment comprising:

- a. a full-caliber forward support with arms;
- b. a full-caliber median support; and,
- c. a less than full-caliber radial extent of some axial length.



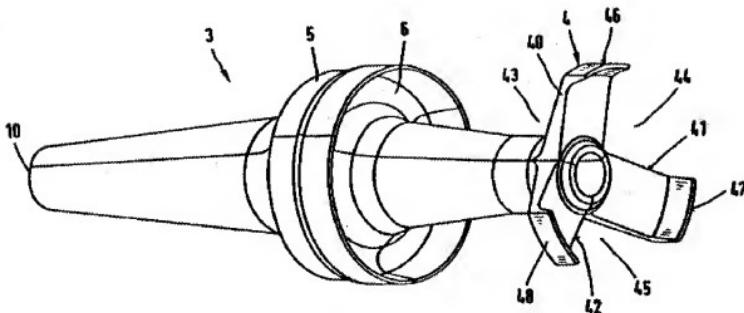
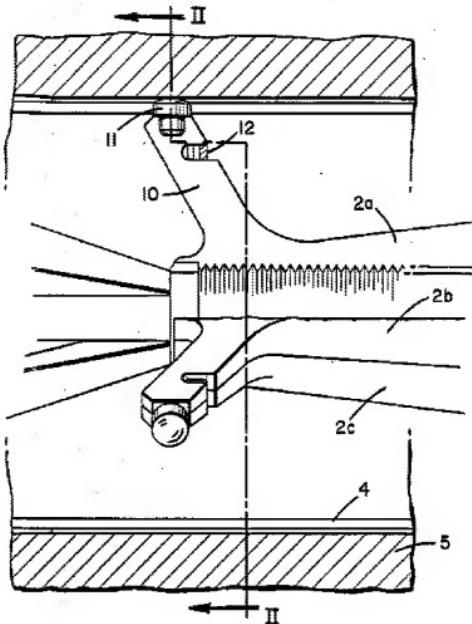


FIG.2

Sippel does not disclose a substantially full gun barrel caliber rear support comprising radial studs. Bisping discloses such a feature as shown below.

FIG. 2a



At the time of the invention, one having ordinary skill in the art would have found it obvious to provide the sub-caliber projectile of Sippel with the rear support of Bisping. The suggestion/motivation for doing so would have been to allow for a practically constant compressive pressure and assure a proper guidance of the projectile during the barrel phase.

4. Claims 2, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sippel and Bisping as applied to claim 1 above, and further in view of established case law. The combination of Sippel and Bisping is as described above with the

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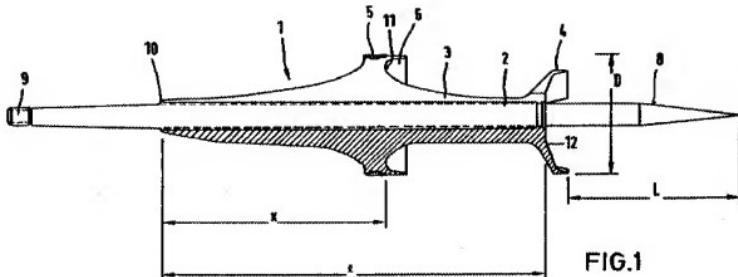
exception of the specific dimensions disclosed in claims 2 and 4. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to provide said dimensions, since it has been held that discovering an optimum value of a result specific variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, USPQ 215 (CCPA 1980). Moreover, the dimensions were not disclosed as being critical to the invention.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sippel, Bisping and case law as applied to claims 1, 4 and 5 above, and further in view of US 5313889 issued to Wilkerson. The combined sub-caliber projectile is as described above with the exception of the arm having a plastic foot. Wilkerson discloses such a foot 46. At the time of the invention, one having ordinary skill in the art would have found it obvious to provide the combined device as discussed above with the foot disclosed in Wilkerson. The suggestion/motivation for doing so would have been to assist the projectile to seat in a more satisfactory operational position in the gun tube and to maintain interference contact with the gun bore (col. 4, ll. 9-12).

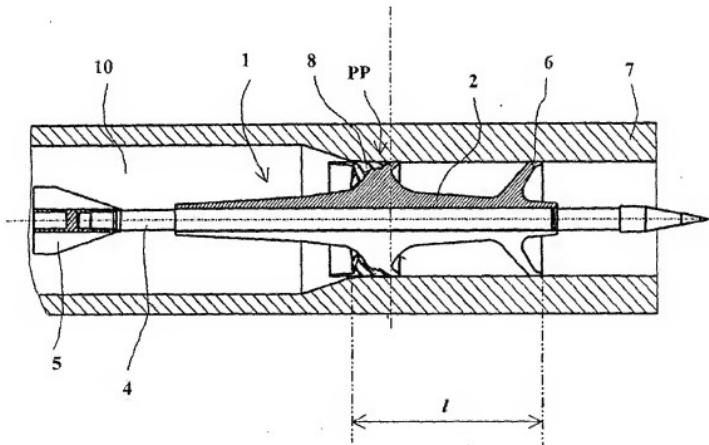
(10) Response to Argument

I. Sippel '777 and Bisping '695 are properly combined under 35 USC 103(a) and, therefore, do render appellant's claimed invention obvious.

Sippel shows a typical subcaliber projectile 1 with a full caliber front support 4 a second middle support 5 and a threaded portion 9 for the attachment of a fin guide mechanism (not shown) as Fig. 1 shows below.



After the fin guide mechanism is attached, the entire projectile is placed in a casing and gun barrel and it looks similar to the applicant's prior art Fig. 1 as shown below.



Bisping discloses a finned subcaliber projectile that addresses the lack of precision due to firing projectiles such as that disclosed by Sippel. According to Bisping, prior art projectiles such as the one disclosed by Sippel are inaccurate and imprecise because

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the "forcing pressure" (the threshold pressure created by propulsion gases sufficient to move the projectile [Bisping, col. 1, ll. 9-15]) is not "substantially constant" or "uniform". (Bisping, col. 1, ll. 40-68).

Bisping addresses this problem by providing a fin 10 and pin 11 assembly located just forward of the fin guide mechanism (not numbered). As shown in Figs. 1a and 1b, the pins are attached to fin 10, extend through casing 4 and abut the inside of gun barrel 5.

FIG. 1a

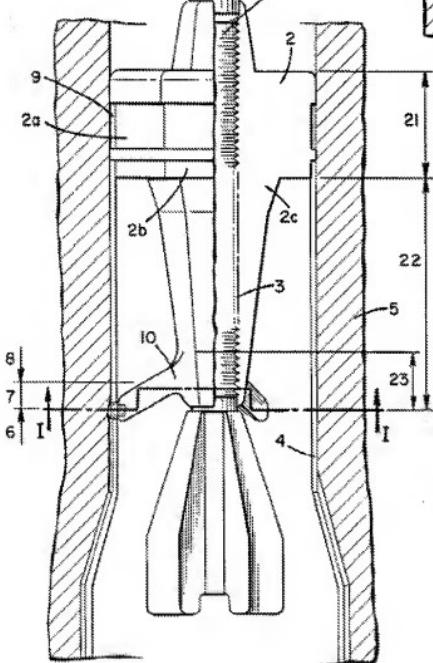


FIG. 1b

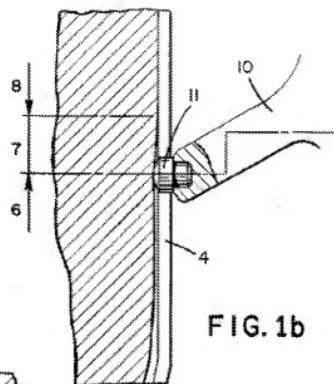
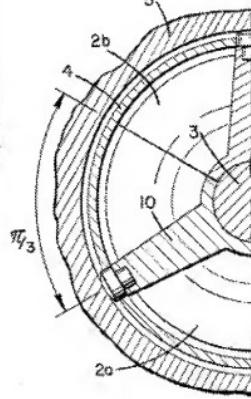


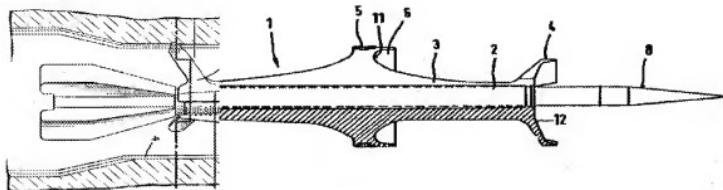
FIG. 1c



(Other embodiments for attaching the fin/pin assembly are shown in Figs. 2a-3b.)

According to Bisping, the fin/pin configuration decreases the disturbances on the projectile and improves projectile performance. (Bisping col. 4, ll. 43-55). Bisping further discloses that the invention improves ballistic precision (col. 1, ll. 60-68), permits easy mounting of the projectile (col. 2, ll. 1-3), reduce dispersion in the forcing pressure (col. 2, ll. 4-7) and assure precise guidance of the projectile during the barrel phase (col 2, ll. 8-12). Bisping's solution to the disclosed problem is not dependent on the number of support structures within the barrel.

To obtain a kinetic energy rod that provides constant compressive pressure and proper guidance, Bisping teaches that it is necessary to provide a set of rear fins 10 with pins 11 attached thereto. Applying the teachings of Bisping to Sippel would create a combined kinetic energy rod projectile as shown below. This combination necessarily requires that Sippel incur a third, rear support seat as claimed by the applicant, in addition to the forward 4 and median 5 support seats it has already.



Applicant argues, without merit, that there would be no motivation to combine the two references because each of the two references discloses "completely functional" structures. According to the applicant, there is no suggestion/motivation to combine the Sippel and Bisping because neither of the references disclose any problems concerning 'constant compressive pressure' and 'proper guidance of the projectile' not solved by the two support seat structure of either reference. However, Bisping's solution to the problem of non-constant compressive pressure and proper guidance is not solved by merely providing a two seat structure. As taught by Bisping, the solution requires a shoe with a rear portion comprising fins and pins that rest against the forcing cone of the barrel to provide stabilization (col. 2, ll. 22-45 and the abstract). Sippel discloses the lack of the fin and pin combination with the pins being located against the forcing cone of the barrel. Without this rear fin/pin configuration, the projectile of Sippel suffers from the drawbacks disclosed in the background of Bisping.

It is also worth noting that the improved ballistic characteristics are not the only benefit obtained by applying the teachings of Bisping. Bisping further teaches that when the pins 11 are fastened through the holes 14 of the case 4, the projectile is maintained very firmly within the sleeve of the case.

II. Conclusion

For the foregoing reasons, the decision of the examiner to reject claims 1-8 should be AFFIRMED.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

//Troy Chambers//

Primary Examiner, Art Unit 3641

12/05/2007

Conferees:

//Micheal Carone//

SPE, Art Unit 3641

//Michelle Clement//

Primary Examiner, Art Unit 3641

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